AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1-9. (canceled).

10. (new): A ready-for-use low-carbon steel mechanical component with elevated characteristics obtained by cold plastic transformation of a laminated long steel product, wherein the composition of said steel, percentages by weight, based on the iron is:

$C \leq 0.15\%$

$0.04\% \leq Nb \leq 0.10\%$

$0.001\% \leq B \leq 0.005\%$

$0.15\% \leq Mo \leq 0.35\%$

$1.3\% \leq Mn \leq 2.0\%$

$0.15\% \leq Si \leq 1.30\%$

$0.01\ \% \leq Al \leq 0.08\ \%$

$N \leq 0.015\%$ with $Ti \geq 3.5 \times \%\ N$;

the remaining being iron and unavoidable residual impurities that result from the steel process,

wherein said long product being obtained from a semi-finished product from continuous casting and hot-rolled in the austenitic range into a wire or rod, then treated thermally by cooling directly during its hot rolling at a cooling rate sufficient to provide it with a bainitic or essentially bainitic structure, and

wherein said long steel product having been subsequently worked by a cold plastic transformation into its final shape, exhibiting a tensile strength at break greater than 800 MPa.

11. (new): Low-carbon steel mechanical component according to claim 10, wherein the heat treatment used in its manufacture comprises a final slow cooling phase whose rate can be as low as 1°C/s at the core.

12. (new): Low-carbon steel mechanical component according to claim 10, wherein the carbon content of the steel is between 0.06 and 0.10%.

13. (new): Low-carbon steel mechanical component according to claim 10, wherein the steel from which it is constituted has a molybdenum content not exceeding 0.30% and a manganese content of less than 1.80%.

14. (new): A ready-for-use forged low-carbon steel mechanical component with elevated characteristics obtained by a hot process plastic transformation of a laminated long steel product, wherein the composition of said steel, percentages by weight, based on the iron is:

$C \leq 0.15\%$

$0.04\% \leq Nb \leq 0.10\%$

$0.001\% \leq B \leq 0.005\%$

$0.15\% \leq Mo \leq 0.35\%$

$1.3\% \leq Mn \leq 2.0\%$

$0.15\% \leq Si \leq 1.30\%$

$0.01\ \% \leq Al \leq 0.08\ \%$

$N \leq 0.015\%$ with $Ti \geq 3.5 \times \%\ N$;

the remaining being iron and unavoidable residual impurities that result from the steel process,

wherein said long steel product being obtained from a semi-finished long product coming from continuous casting and hot-rolled in the austenitic range into a rolled rod or wire,

said rolled rod or wire having then undergone plastic transformation by forging at a temperature of about 1200°C and more to bring it to the final desire shape,

the obtained forged blank having been thermally treated by quenching from said temperature at a cooling rate sufficient to provide it with a bainitic or essentially bainitic structure through to the core, and

wherein the mechanical component exhibits a tensile strength at break greater than 800 MPa.

15. (new): Low-carbon steel mechanical component according to claim 14, wherein the heat treatment used in its manufacture comprises a final slow cooling phase, whose rate can be as low as 1°C/s at the core.

16. (new): Low carbon steel mechanical component according to claim 14, wherein the carbon content of the steel is comprised between 0.06 and 0.10%.

17. (new): Low carbon steel mechanical component according to claim 14, wherein the steel from which it is constituted has a molybdenum content not exceeding 0.30% and a manganese content of less than 1.80%.

18. (new): A process for manufacturing a ready-for-use low-carbon steel mechanical component with elevated characteristics exhibiting a tensile strength at break of more than 800 MPa, said process comprising the following steps:

starting from a long semi-finished product whose composition, percentages by weight, based on the iron is:

$C \leq 0.15\%$

$0.04\% \leq Nb \leq 0.10\%$

$0.001\% \leq B \leq 0.005\%$

$0.15\% \leq Mo \leq 0.35\%$

$1.3\% \leq Mn \leq 2.0\%$

$0.15\% \leq Si \leq 1.30\%$

$0.01\% \leq Al \leq 0.08\%$

$N \leq 0.015\%$ with $Ti \geq 3.5 \times \% N$;

the remaining being iron and unavoidable residual impurities that result from the steel process,

hot rolling said long semi-finished product in the austenitic range into a wire or rod and thermally treating said wire or rod by cooling directly during its hot rolling at a cooling rate sufficient to provide it with a bainitic or essentially bainitic structure, and working the obtained wire or rod by a cold plastic transformation into its final shape.

19. (new): The process according to claim 18, wherein the removal temperature of the wire after rolling being below 1000°C.

20. (new): The process according to claim 18, wherein said thermal treatment comprises a final slow cooling phase, whose rate can be as low as 1°C/s at the core.

21. (new): A process for manufacturing a ready-for-use low-carbon steel mechanical component with elevated characteristics exhibiting a tensile strength at break of more than 800 MPa, said process comprising the following steps:

starting from a long semi-finished product whose composition, percentages by weight, based on the iron is:

$C \leq 0.15\%$

$1.3\% \leq Mn \leq 2.0\%$

$0.04\% \leq Nb \leq 0.10\%$

$0.15\% \leq Mo \leq 0.35\%$

$0.001\% \leq B \leq 0.005\%$

$0.15\% \leq Si \leq 1.30\%$

$0.01\ \% \leq Al \leq 0.08\ \%$

$N \leq 0.015\ \%$ with $Ti \geq 3.5 \times \%\ N$;

the remaining being iron and unavoidable residual impurities that result from the steel process,

hot rolling said long semi-finished product in the austenitic range into a wire or rod;

subjecting said hot-rolled wire or rod to plastic transformation by forging at a temperature of about 1200°C and more to bring it to the final desired shape; and

thermally treating the obtained forged blank by quenching from said temperature at a cooling rate sufficient to provide it with a bainitic or essentially bainitic structure through to the core.

22. (new): The process according to claim 21, wherein the removal temperature of the wire after rolling being below 1000°C.

23. (new): The process according to claim 21, wherein said thermal treatment comprises a final slow cooling phase, whose rate can be as low as 1°C/s at the core.

24. (new): Long low-carbon steel product intended for transformation into a ready-for-use mechanical component of elevated characteristics according to claim 10, wherein said long product has the shape of a hot-rolled wire or rod and that the steel comprises, in percentages by weight, based on the iron:

$C \leq 0.15\%$

$1.3\% \leq Mn \leq 2.0\%$

$0.04\% \leq Nb \leq 0.10\%$

$0.15\% \leq Mo \leq 0.35\%$

$0.001\% \leq B \leq 0.005\%$

$0.15\% \leq Si \leq 1.30\%$

$0.01\ \% \leq Al \leq 0.08\ \%$

$N \leq 0.015\ \%$ with $Ti \geq 3.5 \times \%\ N$, and

the remaining being iron and unavoidable residual impurities that result from the steel process.